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UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

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WHITE PINE BLISTER RUST CONTROL

REGION SEVEN

FISCAL YEAR 1965



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WHITE PINE BLISTER RUST CONTROL IN THE EASTERN REGION

ANNUAL REPORT FOR FISCAL YEAR 1965

This is the first white pine blister rust control report for Region 7 covering accomplishments on a fiscal year instead of a calendar year basis. The reason for this is that, as of June 30, 1965, we were required by the Washington Office to submit all current statistical data for the period covering January 1 to June 30, 1965. This data is combined with the first half of the 1964 calendar year, July 1 to December 31, 1964, to show accomplishments for the full fiscal year. Beginning with Fiscal Year 1965 all accomplishments, statistical reports, and financial reports for blister rust as well as for insect and disease control will be on a full fiscal year. Accomplishment tables are being revised for the new reporting period and will take into account new functional accounting systems. Our own forms such as R7-5270-1 will be modified to work with the new system. A series soon to be issued by the Washington Office.

All blister rust control accomplishment, statistical, and financial reports starting with fiscal year 1965, will be due in the Regional Office by September 1. This should give time to compile all information required by the Washington Office by September 1.

The biggest advantage in reporting on a fiscal year basis is that the year-end breakdown formerly required by the Washington Office for expenditures reporting is eliminated.

United States Department of Agriculture

FOREST SERVICE

Region 7

Upper Darby, Pa.

The cooperative white pine blister rust control program is undergoing a gradual change as the various states take over more responsibility in administering the program. Full administration of blister rust control activities will eventually be handled by state agencies which have the proper designated authority. Signed agreements between the U. S. Forest Service and the cooperating states are required. Where the same state agency is cooperating with the U. S. Forest Service in blister rust and forest insect and disease control, the old agreements are being revised and updated to incorporate both blister rust and insect and disease control. However, before a state can enter into a cooperative insect and disease control program, other than blister rust, the state agency must employ a qualified entomologist and/or pathologist. Other than blister rust the main insect and disease cooperative programs now in effect are insect and disease detection surveys and oak wilt control. Eventually, it is expected that cooperative white pine sawfly control programs will be started in those states where this insect is a serious economic problem. At present the only cooperative white pine sawfly control program is with the State of New York. Small or large periodic insect and disease outbreaks are handled on a project basis.

WHITE PINE BLISTER RUST CONTROL

U. S. FOREST SERVICE - REGION 7

FISCAL YEAR - 1965

This is the first white pine blister rust control report for Region Seven showing accomplishments on a fiscal year instead of a calendar year basis. The reason for this is that, as of June 30, 1965, we were required by the Washington Office to submit all current statistical data for the period covering January 1 to June 30, 1965. This data is combined with the first half of the 1965 fiscal year, July 1 to December 31, 1964, to show accomplishments for the full 1965 fiscal year. Beginning with Fiscal Year 1966 all accomplishment, status, and financial reports for blister rust as well as for insect and disease control, will be on a full fiscal year. Accomplishment tables are being revised for this new reporting period and will take into account new functional accounting procedures. Our own forms such as R7-5270-3 will be modified to tie in with the new 5200 series soon to be issued by the Washington Office.

All blister rust control accomplishment, status, financial, and narrative reports, starting with fiscal year 1966, will be due in the Regional Office by August 15. This should give time to compile all information required by the Washington Office by September 1.

The biggest advantage in reporting on a fiscal year basis is, that the six month breakdown formerly required for accomplishment and expenditure reporting is eliminated.

COOPERATION

The cooperative white pine blister rust control program is undergoing a gradual change as the various states take over more responsibility in administering the program. Full administration of blister rust control activities will eventually be handled by state agencies which have the proper designated authority. Signed agreements between the U. S. Forest Service and the cooperating states are required. Where the same state agency is cooperating with the U. S. Forest Service in blister rust and forest insect and disease control, the old agreements are being revised and updated to incorporate both blister rust and insect and disease control. However, before a state can enter into a cooperative insect and disease control program, other than blister rust, the state agency must employ a qualified entomologist and/or pathologist. Other than blister rust the main insect and disease cooperative programs now in effect are insect and disease detection surveys and oak wilt control. Eventually, it is expected that cooperative white pine weevil control programs will be started in those states where this insect is a serious economic problem. At present the only cooperative white pine weevil control program is with the State of New York. Small or large periodic insect and disease outbreaks are handled on a project basis.

In the Eastern Region the blister rust control cooperative program with the U. S. Forest Service and the ten participating states varies. In Maine, New Hampshire and Vermont, it is on a state-town basis. In Connecticut the Connecticut Agricultural Experiment Station and towns cooperate. In New York it is state and counties. In Massachusetts, Pennsylvania, Maryland, Virginia and West Virginia it is state. The cooperating state agency in West Virginia is the Department of Agriculture.

Most states with a blister rust control cooperative program have one or more federal blister rust district leaders to assist the states in planning and directing the program. The exception is the State of New Hampshire. State Forest Pest Control Chief, T. J. King, administers the blister rust control program in New Hampshire with the assistance of seven field supervisors. Technical assistance is furnished the State through the Northern Insect and Disease Control Zone office.

Although there are no federal district leaders headquartered in Connecticut and Maryland, these States are assisted in program planning and offered technical assistance by Area Leader Sievers, Albany, New York and District Leader C. Fultz, Lost River, West Virginia, respectively.

On national forest lands in the Eastern Region, blister rust control is a cooperative undertaking between the section of Insect and Disease Control and the national forests. Funds for blister rust control are allocated either directly to the forests or to the zones. In the latter case, the zone blister rust personnel perform all the control work using trained foremen and laborers employed by the state in which the national forest or forests fall. The states involved agree to this arrangement and are reimbursed accordingly. In either case zone personnel provides technical assistance.

On Department of Interior lands such as national parks and historical monuments, blister rust control work is handled directly by the National Park Service. The U. S. Forest Service through the Insect and Disease Control Zones, furnishes technical assistance. The control program on national parks and monuments is mainly to protect white pine for aesthetic purposes. Standards for control, therefore, are very different from those used for protecting commercial white pine stands on state and private and national forest lands.

ORGANIZATION AND PERSONNEL

The recently organized U. S. Forest Service Branch of Forest Protection includes the Section of Forest Insect and Disease Control (formerly the Branch of Forest Pest Control) and Section of Forest Fire Control. The Branch of Forest Protection serves state and private agencies, national forests, and other federal agencies in the Eastern Region. Under the direction of Assistant Regional Forester G. R. Allison, the Division of State and Private Forestry,

through consolidation of activities, now has three Branches instead of the original five. Mr. E. L. Peltier is Branch Chief for the Branch of Forest Protection. Section Chiefs for Insect and Disease Control and Fire Control under State and Private Forestry are Messrs. J. K. Kroeber and T. C. Flint, respectively.

The two Regional Zones with headquarters in Amherst, Massachusetts, and Harrisonburg, Virginia, are now known as Forest Insect and Disease Control Zones. By eliminating the name Forest Pest Control the zone personnel should be relieved of complaints concerning rabbit, squirrel, rats, mice and porcupine damage.

The Northern Forest Insect and Disease Control Zone under the Supervision of Mr. M. R. Mulholland have moved their office from 6 Main Street to a new building on 29 Cottage Street, Amherst, Massachusetts.

Personnel changes in the Northern Zone have been rather drastic. In February, 1965, Mr. William H. Klein, Zone Entomologist, transferred to Region 4 with headquarters in Ogden, Utah, and in July 1965 Mr. Alfred C. Tegethoff, Zone Pathologist, transferred to the same Region. Mr. Joseph B. Pike, Jr., Zone BRC Forester retired in May 1965 and Mr. Hubbard Trefts, Zone Entomologist, accepted a position with the State of Maine Forest Service. Miss Shirley Smith, Clerk-Stenographer resigned to get married. Miss Janet Buratti is now employed as Clerk-Stenographer and Mr. Harold Weaver was transferred from the Regional Office as Mr. Mulholland's Administrative Assistant. Mr. Robert Ford has been carrying a large load as the only entomologist in the Zone. This pressure is now relieved by the transfer of Mr. A. R. Hastings, from the West Haven Field Station of the Northeastern Forest Experiment Station to the Zone office. As yet the pathologist position vacated by Tegethoff has not been filled nor the entomologist position vacated by Trefts. The vacancy left by Pike's retirement will be combined with Mr. Ford's position.

The Southern Forest Insect and Disease Control Zone, under the supervision of Mr. John R. George, has undergone little change since the last report. Mr. John Rauschenberger returned from a two-year assignment in the armed services to resume his duties as entomologist. Mrs. Joe Ann Martin was promoted from Clerk-Stenographer to Administrative Assistant.

District Leader, Glenden E. Keaton of Princeton, West Virginia passed away on November 22, 1964, after a 6-month illness. Glenden worked on blister rust control in West Virginia for 23 years. He was devoted to his work and is badly missed by all of his co-workers and friends. Glenden also spent considerable time on oak wilt surveys and control in Kentucky. His work on this program was highly commended.

The death of Glenden required the realignment of district responsibilities in this State. There are now two districts instead of three. District Leader, Clarence Fultz, administers the northern district while Delbert Gillispie administers the southern district. The pest control work in counties of Tucker, Barbour, Taylor, Marion and Wetzell has been transferred from Gillispie's district and added to the northern district. Mr. Gillispie has been assigned all the counties in the old southern and central districts with the exception of the above mentioned five counties. In addition, he is responsible for all work on the Monongahela National Forest, including those portions located in the northern district. Because of the increased duties and responsibilities, Mr. Gillispie has been promoted.

Dana Keaton, Pipestem, West Virginia, has been appointed as Field Agent with the West Virginia Department of Agriculture. Dana previously was foreman on the blister rust control project in southern West Virginia. Technical advice and direction is given by District Leader, Delbert Gillispie.

Mr. Joseph Pike, Jr., who retired to Bridgton, Maine, in May 1965, after serving many years as District Leader for the Bridgton District and as Zone BRC Forester in the Northern Zone since March 1963, is greatly missed. Joe has a remarkable way of getting along with people. Joe was a master in giving the shortest answers to many questions, this was a curt "yep" or "nope". He was also adept in arguing, without malice, a point which he fully wanted to understand or where he felt the other fellow was wrong.

Mr. David Stewart who has administered the Bridgton District since March of 1963, has recently moved his headquarters from Bridgton to Harrison, Maine. Dave is a state employee. He has done an excellent job in administering his district.

Mr. Richard E. Curtis who was assigned to special projects - such as ribes ecology, rust hazard evaluation, herbicide tests, I&E, etc., in the Northern Zone, retired in April 1965. Dick was very conscientious in all projects he undertook. His services will long be remembered. Dick and his wife Doris are living in Rochester, New Hampshire.

Mr. T. K. Barrie, Coudersport, Pennsylvania, retired after 33 years of work on the blister rust program in Pennsylvania. His presence will be greatly missed by all. Mr. Barrie, a state employee, was a foreman on the blister rust project in north central Pennsylvania directed by District Leader, R. P. Fatzinger.

All of us who knew Henry Yost were saddened to hear of his death in May, 1965. Henry spent many years on white pine blister rust control in the southern Appalachians. He was state leader on blister rust in the State of Maryland and later served as area leader administering blister rust control activities in North Carolina, Virginia, Maryland and Delaware. After leaving the old Bureau of Entomology and Plant Quarantine Henry transferred to the Agricultural Research Administration. He served with this agency in Long Island, New Jersey and Gulfport, Mississippi. He was stationed in Gulfport when he died. Henry is survived by his wife Kay, daughter Martha and son Robert.

The State of Vermont has had the following changes in personnel:

Mr. G. R. Nielsen, Assistant-in-Charge of Pest Control, resigned to accept an Extension Entomologist position at Burlington, Vermont.

Mr. E. B. Walker, formerly Assistant-in-Charge of Pest Control in Vermont and later as Entomologist with the Pennsylvania Department of Forests and Waters, accepted reappointment to his former position in June 1965.

Mr. E. F. Leysath, former Rutland County Forester, is now District Supervisor. His work involves blister rust and other forest pest control activities.

Forestry Field Supervisor, R. E. Baird, resigned to go into private business. Mr. Baird was on blister rust control in the St. Johnsbury District.

STATUS OF BLISTER RUST CONTROL

All 14 States in the Eastern Region have, over the past number of years, been involved in white pine blister rust control. The states with no current blister rust control programs are Rhode Island, New Jersey, Delaware and Kentucky. The remainder of the states; namely Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, Pennsylvania, Maryland, Virginia and West Virginia, cooperate with the U. S. Forest Service on a year round program. Besides work on state and private lands, blister rust control is also performed on national forests and national park lands. The largest control program on national forest lands has been on the George Washington National Forest and on national park lands on the Shenandoah National Park. Both are in the Southern Insect and Disease Control Zone.

Although over 95 percent of the control area in the region is on maintenance, we cannot become lax, especially in the case of high rust hazard areas. The objective is to maintain the good control already established. Also, we must keep abreast of new white pine plantings as well as natural regeneration. The profitability of scheduling periodic surveys in low rust hazard areas is questionable. The guidelines now being prepared by the Northeastern Forest Experiment Station, to assist in evaluating white pine areas from an economic point of view, will be tested in the field during Fiscal Year 1966. See page 15 on Special Studies.

The table on page 8 shows the status of blister rust control by states, national forests and national parks as of June 30, 1965. The total acreage of 11,665,223 now on maintenance is 95.2 percent of the control acreage. Initial work remaining to be done is 86,392 acres on state and private lands, 148 acres on national forest lands and 355 acres on national park lands. Acreage requiring rework is 477,818 on state and private lands, 26,862 on national forest lands and 2,463 on national park lands. These figures, of course, are based entirely on the acreage differences shown in the status table. The figures representing initial and rework acreage to be done varies, since control area adjustments are continually being made in the field.

The reduction of protective zone boundaries, where it has been determined over the years that rust spread is very local, has gradually reduced the control acreage figure. Since 1960 the control acreage has been reduced by less than five percent, while the pine acreage has increased only one percent. The most significant figure is the acreage set aside as needing no further work. Since 1960 this has increased some 430,000 acres. As of June 30, 1965, 3,430,715 acres on state and private lands and 250,249 acres on federally owned lands, have been classed as needing no further work. Most of this acreage classification, sometimes called greenlining, was started some years ago in the region. We feel that a great deal more acreage can be placed in the no further work category. The economic survey guidelines, to be tested in Fiscal Year 1966, should help the states to reclassify large acreages still retained for periodic examination. Some states have been reluctant to take pine and control acreage off the active maintenance list even though there has been no economic loss after years of periodic examinations.

It used to be that blister rust control accomplishments were largely based on the number of ribes eradicated and the number of acres covered and the efficiency of the work performed. Today we must give greater consideration to various economic factors to determine if control is profitable or not. This holds true for high as well as low rust hazard conditions. This is not contrary to an earlier statement in this report where it is stated that we cannot become lax in maintaining the good control already established. A good economic evaluation survey system will more than strengthen our position. If a white

pine area is left "for the birds", even though it is damaged with rust, we should have a good answer "why" following a sound economic evaluation of the stand. This is where present values vs. expected returns at harvest enters into the picture.

The State of Massachusetts now has 1,105,835 acres which require no further working. This is 80 percent of the total control acreage in the State. Following Massachusetts are Virginia with 70 percent and Connecticut with 69 percent. The remainder of the states range from 7 to 29 percent of the control acreage as needing no further work.

The status map on page 9 graphically shows in a broad way the status of blister rust control in the region. All the areas colored by no means indicate solid white pine. They indicate there is a certain acreage of white pine in each of the colored zones that falls in high rust hazard, (red) where constant checks and ribes eradication must be performed to maintain control of the disease; areas on maintenance (blue) where only periodic examinations are needed and (green) where control is no longer a problem because either the areas are free of wild ribes, ribes regeneration has not occurred since the initial working, or when the rust hazard is so low that little or no infection takes place even though white pine and ribes are growing in association. When pine values are such that the cost of control exceeds the estimated returns at harvest, then such areas should be eliminated from the control records and the status of control figures adjusted accordingly.

Our biggest problem as far as high rust hazard is concerned is in the Adirondack region and Tug Hill section of New York State; the Upper Connecticut River Valley, the Catskill and Berkshire Mountains, and the higher elevations in the southern section of the region. Portions of the area shown on maintenance (blue) are high rust hazard but periodic ribes eradication have kept the ribes population down. In such areas where ribes regeneration has slackened to the point where it is felt that the areas can be safely left for periods of 5 - 10 years or more then they are placed on maintenance. It is within the blue area where the bulk of the surveys are conducted on a scheduled plan. This involves the examination of some 1,300,000 acres annually. The above large acreage figure is a gross figure which includes various types of surveys. The net acreage covered by all surveys probably does not exceed 50,000 acres. Including administration, technical assistance, program direction and labor, the cost of conducting surveys averages about 27¢ per acre.

TABLE 1

STATUS OF BLISTER RUST CONTROL IN THE EASTERN REGION - AS OF JUNE 30, 1965

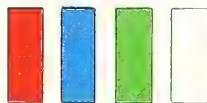
State	Acres White Pine	Acres Control	Acres Initially Worked	Acres on Maint.	% On Maint.	Acres Pre-Maint.		No Further Work
						Work Remaining Initial	Rework	
Work done on State and Private Lands								
Maine	940,605	2,071,637	2,036,724	1,910,118	92.4	34,913	126,606	149,833
N.H.	1,260,277	2,339,289	2,339,289	2,305,308	98.1	-	33,981	352,215
Vt.	177,760	636,130	626,673	559,214	87.6	9,457	67,459	49,142
Mass.	576,956	1,387,862	1,387,651	1,365,540	98.5	211	22,111	1,105,835
Conn.	110,275	469,520	468,744	468,744	99.4	776	-	326,185
R.I.	64,081	147,778	147,778	147,778	100	-	-	147,778
N.Y.	691,883	1,943,936	1,918,878	1,790,486	92.2	25,058	128,392	276,415
N.J.	3,771	16,742	16,742	16,742	100	-	-	16,742
Penna.	107,016	466,347	456,460	438,590	94.2	9,887	17,870	28,597
Del.	242	6,186	6,186	6,186	100	-	-	6,186
Md.	75,968	183,683	183,683	152,474	83.2	-	31,209	54,553
Va.	539,397	1,233,991	1,230,752	1,212,169	98.3	3,239	18,583	859,751
W.Va.	250,090	493,403	490,552	458,975	93.1	2,851	31,577	107,721
Ky.	31,199	114,312	114,312	114,312	100	-	30	114,282
Total S&P	4,829,457	11,510,816	11,424,424	10,946,606	95.1	86,392	477,818	3,430,715

TABLE 1 (Continued)

STATUS OF BLISTER RUST CONTROL IN THE EASTERN REGION - AS OF JUNE 30, 1965

State	Acres White Pine	Acres Control	Acres Initially Worked	Acres on Maint.	% On Maint.	Acres Pre-Maint.		No Further Work
						Work Remaining	Initial Rework	
Work done on National Forest Lands								
White Mt., Me.	1,753	3,371	3,371	3,371	100	-	-	-
White Mt., N.H.	1,213	2,194	2,194	2,194	100	-	-	-
Green Mt., Vt.	448	1,653	1,653	1,653	100	-	-	-
Allegheny, Pa.	1,047	4,525	4,525	4,200	92.4	-	325	-
Geo. Wash., Va.	190,489	391,292	391,144	371,777	95.5	148	19,367	123,571
Geo. Wash., W. Va.	43,103	68,633	68,633	67,828	98.5	-	805	3,747
Monon. W. Va.	49,180	90,520	90,520	87,974	97.2	-	2,546	24,607
Jeff. Va.	64,375	118,739	118,739	114,920	96.9	-	3,819	66,292
Cumb., Ky.	16,980	32,002	32,002	32,002	100	-	-	31,927
Total N.F. Lands	368,588	712,929	712,781	685,919	96.2	148	26,862	250,144
Work done on National Park Lands								
Acadia, Me.	3,500	17,318	17,318	17,318	100	-	-	-
Saratoga Battlefield N.Y.	145	1,550	1,550	1,550	100	-	-	-
Hyde Park, N.Y.	12	105	105	105	100	-	-	105
Shenandoah, Va.	4,197	15,082	14,727	12,396	82.3	355	2,331	-
Blue Ridge Parkway, Va.	507	1,461	1,461	1,329	90.1	-	132	-
Total N.P. Lands	8,361	35,516	35,161	32,698	92.2	355	2,463	105
All work done in Eastern Region								
All Control Operations	5,206,406	12,259,261	12,172,366	11,665,223	95.2	86,895	507,143	3,680,964

LEGEND



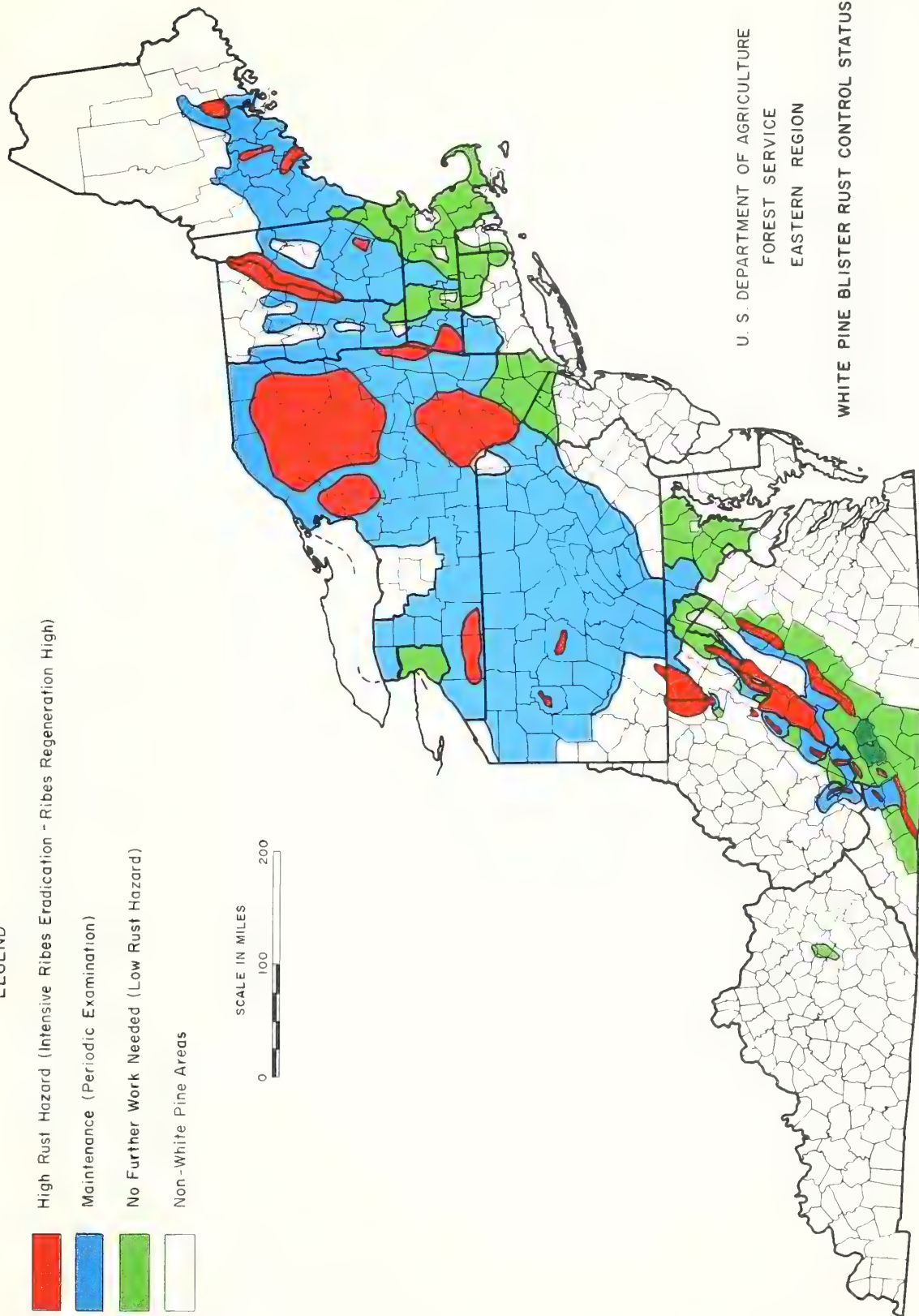
High Rust Hazard (Intensive Ribes Eradication - Ribes Regeneration High)

Maintenance (Periodic Examination)

No Further Work Needed (Low Rust Hazard)

Non-White Pine Areas

SCALE IN MILES



U. S. DEPARTMENT OF AGRICULTURE
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WHITE PINE BLISTER RUST CONTROL STATUS MAP

BLISTER RUST CONTROL ACCOMPLISHMENTS - FISCAL YEAR 1965

The continued interest and financial support of the blister rust program by the states in the Eastern Region has kept the disease under control on nearly five million acres of white pine. The excellent control attained has entirely been by the eradication of ribes by hand or by the use of herbicides. During the last few years 2,4,5-T in fuel oil has been used more and more. At present over 90 percent of all ribes eradication is done with this herbicide.

Antibiotics were expected to do wonders in controlling the rust on infected white pines. After several years of testing antibiotics in the Eastern Region this method of control has been discontinued. Except for a few trees, where direct treatment was applied to scarified trunk cankers, results have been very disappointing.

The Lake States Experiment Station is continuing tests with antibiotics and fungicides. Any more work of this kind in the Eastern Region will depend on the success the Station may eventually have in finding a material which is effective in arresting the disease on eastern white pine. In the meantime, we will continue to eradicate the ribes. In New York State some canker pruning and canker excising is done on infected white pines within high priority areas such as state parks and forests. Low pruning sometimes called pathological or sanitation pruning, is being tried out on some high rust hazard white pine areas in upper New York State. More will be said about this later.

Surveys of various kinds (area examination, pine evaluation, checking, mapping infection, etc.) were made on 1,627,381 acres with 88 percent of the work being done on maintenance areas. On state and private lands the average coverage per man day on maintenance surveys was 130 acres and on pre-maintenance 124 acres. There has been no effort in reporting separately the acres covered by type of surveys conducted on the same areas, hence, the survey acreage figure shown is a cumulative figure. However, the district leaders are careful in keeping net control acreage figures in their control area record books. The table showing status of control is based on the net control acreage (white pine plus protective zone).

On ribes eradication, acres worked (initial and rework) on pre-maintenance was 39,463 using 4,837 man days. On maintenance, 38,703 acres were worked using 4,416 man days. The acres covered per man day on pre-maintenance and maintenance was nearly the same, averaging 8 and 9 respectively.

Table 2 on page 12 shows ribes eradication and survey accomplishments during the fiscal year on state and private and federal lands. Control work on state and private lands involved 86 percent of the total acreage covered on ribes eradication and 97 percent of the total acres surveyed in the region. Because of the increased amount of maintenance work involving ribes eradication, heavy concentrations of ribes are becoming less and less. The number of ribes destroyed has no connection with the acreage worked. This all depends on species and concentrations and how much maintenance work is involved. In Garrett County, Maryland with no maintenance work some 256,000 ribes were destroyed on 7,036 acres. In New York State with 33,854 acres worked which included 17,448 acres on maintenance work, 395,000 ribes were destroyed. This is nearly five times more acreage worked than in Maryland to find and destroy some 100,000 more ribes. This comparison is brought out only to show that the number of acres covered and the number of ribes destroyed is meaningless if used as a criteria in comparing accomplishments between operating units. All the work in western Maryland is in very high rust hazard with high concentrations of ribes. In New York State as well as in other states with maintenance work equal to or greater than pre-maintenance work, more acreage has to be covered per man day to locate and destroy ribes. In New York State the acres covered per man day was twice that of Maryland. In Connecticut having all maintenance work, the acreage covered per man day was over four times that of Maryland.

In the Northern Zone no control work was performed on national forest lands during the fiscal year. In the Southern Zone control work was done on four national forests - the Allegheny, George Washington, Jefferson and the Monongahela. Acreage surveyed was 54,590. On ribes eradication including initial, rework and maintenance, 8,494 acres were worked using 1,196 man days. A total of 67,000 ribes were destroyed.

Work on Department of Interior lands included the Saratoga Historical Battlefield in New York State, the Acadia National Park in Maine and the Shenandoah National Park and Blue Ridge Parkway in Virginia. Every two years the Acadia National Park is checked for ribes, infection and white pine conditions. District Leader Bradbury reports that no ribes concentrations were found on 374 acres surveyed. Total acreage surveyed on all parks was 4,113. On ribes eradication, including all workings, 2,256 acres were worked using 312 man days. Because of high rust hazard, high recreational use, and valued scattered white pine areas, more blister rust control work is done on the Shenandoah National Park in Virginia than any other national park in the Eastern Region. During the fiscal year the acres worked on the park came to 1,445 with 790 initial and 665 maintenance. Some 21,000 ribes were eradicated. District Leader Rodamer says that many white pine areas on the park are on the increase in size as well as density.

TABLE 2

SUMMARY OF RIBES ERADICATION AND SURVEY WORK IN THE EASTERN REGION F.Y. 1965

Control Operation	Acres Worked (Ribes Eradication)				Man Days Erad.	Thousands of Ribes Destroyed	Acres Surveyed	Survey Man Days
	Initial	Rework	Maint.	Total				
Work on State and Private Lands								
Maine	132	517	1,043	1,692	814	155	223,900	2,327
N.H.	-	131	703	834	251	190	356,181	2,669
Vt.	1,686	112	961	2,759	222	32	117,736	792
Mass.	-	382	43	430	203	12	43,235	480
Conn.	-	-	1,798	1,798	68	43	54,318	494
N.Y.	6,501	2,905	17,448	33,854	2,823	395	504,099	4,191
Penna.	362	1,670	519	2,493	274	29	131,583	390
Md.	3,569	3,467	-	7,036	1,109	256	11,228	32
Va.	185	1,686	1,285	3,156	582	15	63,866	357
W. Va.	986	4,080	8,258	13,324	1,399	79	62,538	451
Total								
S&P	13,363	21,950	32,063	67,376	7,745	1,206	1,568,678	12,183
Work on National Forest Lands								
Allegheny Pa.	290	-	150	440	65	6	-	-
G. Wash. Va.	157	693	2,701	3,551	566	16	33,824	146
G. Wash. W. Va.	-	1,268	722	1,990	253	14	9,838	66
Jeff. Va.	30	238	403	671	129	6	5,509	75
Monon. W. Va.	546	40	1,256	1,842	183	25	5,419	38
Total N.F.	1,023	2,239	5,232	8,494	1,196	67	54,590	325
Work on National Park Lands								
Acadia Me.	-	-	-	-	-	-	374	13
Saratoga Hist. Pkwy, N.Y.	-	-	115	115	15	2	1,435	6
Shenandoah, Va.	790	-	665	1,455	270	21	2,135	24
Blue Ridge Pkwy, Va.	-	98	588	686	27	(1) (153)	169	4
Total N.P.	790	98	1,368	2,256	312	23	4,113	47
Total All Lands	15,176	24,287	38,663	78,126	9,253	1,296	1,627,381	12,555

(1) Actual number of ribes eradicated.

Direct Treatment of White Pine

The control of blister rust through the direct treatment of white pine was performed only in the State of New York during the fiscal year, where 37,315 trees were treated on 336 acres using 368 man days. This work involved excising cankers on valued pole size trees, pruning limbs with branch cankers and low pruning on young white pine plantations. All work was performed on state owned lands.

Area Leader F. U. Sievers observed that much of the infection occurring on white pine planted by the State in Lewis, St. Lawrence, Franklin and Clinton Counties, was on the lower branches. These plantations are all in high rust hazard areas. Ribes eradication has been difficult and costly because of heavy brush growth and high regeneration following initial eradication. Sievers advocated doing some low pruning in these plantations on selected potential crop trees following initial ribes eradication. After discussing this with Mr. C. J. Yops, Superintendent of the Bureau of Forest Pest Control, several plantations were treated using this method. Dr. S. B. Silverborg, Pathologist, at the Forest Department of Forest Botany and Pathology, State College of Syracuse, New York, became interested in Sievers' approach and plans to establish several low pruning study areas.

The objective of low pruning, which is sometimes called pathological pruning, is to reduce the chances of trees becoming fatally infected where the lower portion of branches are the main target. Some work along this line has been done in the Lake States by Dr. D. M. Stewart, Plant Pathologist with the University of Minnesota and Dr. Eugene P. Van Arsdale of the Lake States Forest Experiment Station.

Nursery Sanitation

Nursery sanitation was performed on two state nurseries at Saratoga and one at Lowville in New York State. These nurseries are examined annually. The State Forest Nursery at Greenbush, Maine, expanded the sanitation zone by 2 1/2 acres to offer protection to an experimental planting of white pine seedlings grown from seed collected from 135 different sources all over the world. Progeny tests are planned for this experimental planting for insect and disease resistance, including blister rust.

Two state nurseries in Massachusetts located at Amherst and Clinton were checked for ribes. The Parsons State Forest Nursery at Parsons, West Virginia, was also checked for ribes. The only ribes reported found on all nursery sanitation work were two small currant bushes near the outer limits of the protective zone of the state nursery at Amherst, Massachusetts.

Herbicide Tests

The reports on testing the Dow Chemical herbicide Tordon 22K and Tordon 101 are somewhat conflicting as to results obtained. It was interesting to note that in western Maryland where ribes were treated by District Leader Fultz using Tordon 22K and Tordon 101 at a concentration of 1/2 ounce of the chemicals to one gallon of water, all of the bushes in two plots treated in August of 1964 were killed using both foliage and basal stem treatment. The May 1964 treatment showed only a 17 percent kill using 22K as a basal spray and 20 percent kill as a foliage spray. Tordon 101 gave a 16 percent kill used as a basal spray and 56 percent as a foliage spray. Why the kill was 100 percent in August and not in May is not understandable.

In the Northern Zone, Area Leader Sievers obtained 100 percent kill (basal and foliar) on R. Cynosbati using 2 ounces of 22K to 1 gallon of water. In using the recommended concentration of 1/2 ounce 22K to one gallon of water and 1 fluid ounce of Tordon 101 in 3 quarts of water, the kill (basal and foliar) on R. Cynosbati, R. hirtellum and R. glandulosum was inconsistent. On R. americanum, R. triste and R. lascustre the kill was good using both treatments.

The main advantage of using Tordon or some other water soluble herbicide, if concentration can be found as effective as 2,4,5-T, would be the elimination of fuel oil.

Herbicides in pellet form would be ideal for our work. The Tordon 10K pellet has proven very effective, but the fear of damaging surrounding desirable vegetation has prevented us from using this herbicide. Some tests are being made using the chemical called Banvel-D. Banvel-D has evidently been used with success on barberry eradication. It is supposed to be safer than Tordon 10K and is less expensive. On July 7, a test plot using Banvel-D pellets was established in the Southern Zone. On an 0.2 acre plot 161 ribes were treated; on 40 bushes the duff was scraped away from the crowns and 1/2 ounce of the pellets were applied to each bush; on 88 bushes 1/2 ounce of the pellets were applied on top of the duff around the crowns and on 33 bushes a small amount of the pellets were applied from a 1/4 cup measure. The latest report indicated a 100 percent kill with all treatments and no apparent damage to surrounding vegetation.

Checking

Systematic strip checks are run in most states following ribes eradication. Random checks are still used under certain conditions such as when ribes are concentrated along narrow stone walls, hedgerows and rocky runs. The lack of new infection on white pine is evidence that checking is adequately done.

Checking records are not kept either in the Zone or Regional Offices. These records are only needed by the district leaders. The only purpose of a check is in determining whether the ribes eradication crews have performed satisfactory work.

During F.Y. 1966 the sequential system of sampling to determine crew efficiency will be tried. This method of checking was developed by Mr. Harold Offord before he retired as Chief of Forest Disease Research with the Pacific Southwest Forest and Range Experiment Station, Berkeley, California. This method of checking will probably have only limited use in the Eastern Region.

Information and Education

Informational and educational activities continue to be active in all states. Both federal and state BRC personnel are not letting up in the important activity. It is particularly important in those states where towns and counties cooperate in financing the blister rust program. Mr. Richard E. Curtis, before he retired, worked up two short programs on blister rust control for the LaBelle slide tape component. We plan to prepare more programs for the LaBelle on Insect and Disease Control as well as blister rust. Both zones have a LaBelle unit. Programs when properly prepared and using good color transparencies are excellent for training purposes as well as for general I&E use.

Special Studies

A satisfactory means of evaluating white pine areas based on sound economics has been desired for a long time. The establishment of broad rust hazard zones by Jack Charlton and the rust hazard appraisal guides devised by Charlton and Curtis, was a step forward to evaluating areas using ecological factors, but did not take into consideration the profitability of doing control work based on present and future pine stumpage values. During the past few years, Mr. Robert Marty, Forest Economist with the Northeastern Forest Experiment Station, has been conducting a research project in blister rust control economics. The background data for this project was obtained in the field by state and federal blister rust personnel. The field data was obtained in two separate surveys on randomly selected pine areas. Below is a resumé of white pine pest control research project progress as presented by Robert Marty.

"The research project in blister rust control economics, being carried out by the Northeastern Forest Experiment Station, in cooperation with various forest pest control agencies in the East, is progressing satisfactorily. A Forest Service Research Note, NE-28, is now available which reports on the results of a survey of blister rust infection rates. Because of the success of the

blister rust control program, infection rates have been reduced to a very low level in most areas. However, high and potentially serious infection rates are still to be found in areas of high hazard where control work has not recently been carried on.

"Infection rate information will be used in conjunction with results of a second survey in stand and pest conditions now being completed, to develop guides to the control areas that offer profitable pine pest control opportunities. The final phase in this research project will be to present a region wide picture of the pine resource, to guide policy decisions in protection, management, and utilization programs." As previously mentioned the data for both surveys have been statistically analyzed and guidelines will be made up for field use. Basic informational data with tables and charts will soon be issued in another Forest Research Note. Marty feels that certain changes in the guidelines may be necessary after the guides are tested in the field. Field data will be taken on 1/200 acre plots. The number of plots will depend on the size of the area evaluated.

It must be stressed that these guides are only to be used in evaluating white pine areas of commercial importance. Guides used for economic surveys on white pine areas in recreational, watershed and other noncommercial locals will depend on control standards established by the agency concerned. This is true for national park lands, state parks, forest preserves, etc.

Seasonal Employment

The number of seasonal employees on blister rust control varies throughout the year with the peak employment reached during the eradication season; namely, May through August. Peak employment is shown below by states, national forest and national parks.

<u>Unit</u>	<u>Peak Seasonal Employment</u>
Maine	67
New Hampshire	29
Vermont	13
Massachusetts	7
Connecticut	10
New York	86
Pennsylvania	12
Maryland	22
Virginia	13
West Virginia	33
<u>Sub-total-States</u>	<u>292</u>

<u>Unit</u>	<u>Peak Seasonal Employment</u>
Allegheny National Forest (Pa.)	4
George Washington N.F. (Va. & W. Va.)	25
Jefferson N. F. (Va.)	3
Monongahela N.F. (W. Va.)	8
<u>Sub total-National Forests</u>	<u>40</u>
Acadia National Park (Maine)	2
Saratoga Historical Park (N.Y.)	2
Shenandoah National Park (Va.)	4
Blue Ridge Parkway (Va.)	3
<u>Sub total-National Parks</u>	<u>11</u>
<u>TOTAL ALL UNITS</u>	<u>343</u>

Conclusion

This report has not presented in detail all of the usual activities connected with blister rust control. Instead more space was devoted throughout the report in presenting the importance of conducting sound economic pine area evaluations prior to control operations. A great deal of effort, time and money have been expended in developing standards and guides to assist the field men in conducting pine area surveys based on the profitability of control.

We trust that all cooperating agencies will take advantage of this effort and will make good use of the guides after they have been extensively tried out in the field. We feel certain that this is the best approach to sound pine area evaluation indicating conditions in which control is a worthwhile undertaking.

